Remarks

Reconsideration of this Application is respectfully requested.

Claims 21-25 and 32-35 are pending in the application, with claim 21 being the sole independent claim. Based on the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Obviousness-Type Double Patenting Rejection

The Examiner has rejected claims 21-25 and 32-35 under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1, 3, and 9 of U.S. Patent No. 7,006,806 ("the '806 patent"). (Office Action, pages 5-6.)

Applicant respectfully requests that the currently asserted double patenting rejection be held in abeyance until claimed subject matter is otherwise deemed allowable. After analyzing the final allowed claim scope, Applicant will consider filing a terminal disclaimer if necessary to overcome an obviousness-type double patenting rejection.

Rejection Under 35 U.S.C. § 103

Claims 21-25 and 32-35 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 5,404,405 to Collier et al. ("Collier") in view of U.S. Patent No. 4,716,589 to Matsui ("Matsui"), and further in view of U.S. Patent No. 6,002,726 to Simanapalli et al. ("Simanapalli"). For the reasons set forth below, Applicant respectfully traverses the rejection and the Response to Arguments at pages 7 and 8 of the Office Action.

Independent claim 21 recites features that distinguish over the applied references. For example, claim 21 recites, among other features, "a denominator device that

estimates a value 1/X(n) based at least in part on a prior estimated value of 1/X(n) *and a transition speed of X(n)*" (emphasis added).

The Examiner, on page 3 of the present Office Action, explicitly agrees that Collier does not teach or suggest the aforementioned feature of claim 21. Matsui does not cure the deficiency of Collier, nor has the Examiner alleged that Matsui cures the deficiency of Collier. Rather, the Examiner alleges the Simanapalli cures the deficiencies of Collier. Applicant respectfully disagrees.

Simanapalli is directed to "a method for use with a digital signal processor to extract an information bearing signal ω(n) from a base-band signal in the form of an inverse function." (Simanapalli, 2:39-42.) Specifically, the inverse function is given by:

$$\frac{1}{x(n)} = \frac{1}{I^2(n) + Q^2(n)}$$

(Simanapalli, 4:5-22). Although the inverse function can be used to extract an information bearing signal ω(n) from a base-band signal, Simanapalli notes that the inverse function "typically requires an undesirably high number of instruction cycles" to solve in a DSP. (Simanapalli, 2:1-7) The number of instruction cycles, according to Simanapalli can be mitigated by assuming "that the squared components of I and Q remain constant over several samples." (Simanapalli, 2:20-22.)

Under this assumption, Simanapalli constructs the following equation, shown as step 78 in FIG 3, to approximate the inverse function of a current sample based on the inverse function of a previous sample:

$$r(n + 1) = r(n)[2 - r(n)x(n + 1)]$$

where r(n+1) is the approximated inverse function of the current sample, r(n) is the inverse function of the previous sample, and x(n+1) is given by (I^2(n+1) + Q^2(n+1)).

(Simanapalli, 5:34-50.)

The Examiner alleges, at page 3 of the Office Action, that the above noted equation teaches "a denominator device that estimates a value $1/X(n)$ based at least in part on a prior estimated value of $1/X(n)$ ***and a transition speed of X(n)***" as recited in claim 21 (emphasis added). However, the above noted equation of Simanapalli does not include, nor make use of, "a transition speed of $X(n)$" as recited in claim 21. At most, the above equation of Simanapalli includes, or makes use of, the inverse function of the previous sample $r(n)$ and $x(n+1)$, neither of which are "a transition speed of $X(n)$" as recited in claim 21. In fact, $r(n)$ and $x(n+1)$ each represent a *single* sample of their respective signals. A *single* sample does not convey any information regarding a transition speed of their respective signals.

For at least the foregoing reasons, independent claim 21 is patentable over the combination of Collier, Matsui, and Simanapalli. Dependent claims 22-25 and 32-35 are similarly patentable over the combination of Collier, Matsui, and Simanapalli for at least the same reason as claim 21, from which they depend, and further in view of their own respective features. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 21-25 and 32-35.
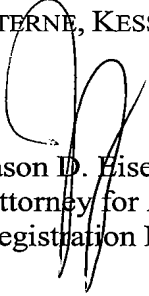
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Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

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